IN THE CLAIMS:

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of the Claims:

1. (Currently amended) A reconfigurable spatial light modulator system arrangement comprising:

a controller ~~(4)~~ for holding a ~~compensated~~ pattern;

an incident light source;

at least one ~~first~~ spatial light modulator ~~(3)~~, the at least one spatial light modulator having a plurality of ~~addressable~~ pixels, ~~controlled by the controller (4)~~ each pixel being capable of modulating incident light and collectively replicating the ~~compensated~~ pattern;

a scatter plate ~~(5)~~ of known characteristics in an optical path between the incident light source and an observer or detector; ~~for scattering light from the first spatial light modulator (3); optical means (6, 12) for directing light scattered by the scatter plate (5) and presenting a pattern (7) to an observer or detector;~~

the arrangement being adapted to present light propagating from a spatial light modulator to the observer or detector; and

the pattern being a pattern compensated ~~compensated pattern being related~~ according to ~~both~~ the scatter plate characteristics ~~and to the pattern presented to the observer or detector~~.

2. (Currently amended) The system of claim 1 wherein the scatter plate ~~5~~ has a number of surface features greater than the number of pixels on the ~~first~~ at least one spatial light modulator ~~3~~.

3. (Currently amended) The system of claim 1 wherein the controller ~~(4)~~ stores pre-calculated compensated pattern for each pattern to be displayed.

4. (Currently amended) The system of claim 1 wherein the controller ~~(4)~~ is a computer with storage and means for calculating a compensated pattern for each pattern to be displayed.

5. (Currently amended) The system of claim 1 wherein the controller ~~(4)~~ is a computer with storage and means for calculating both a computer generated hologram from a human readable format and a compensated pattern for each pattern to be displayed.

6. (Currently amended) The ~~display~~ system of claim 1 wherein ~~the~~ at least one of the at least one ~~first~~ spatial light modulators ~~(3)~~ is an electrically addressable liquid crystal spatial light modulator (EASLM) operable either in transmissive or reflective mode.

7. (Currently amended) The system of claim 6 wherein the system comprises at least two spatial light modulators arranged such that light from a first spatial light modulator is directed towards a second spatial light modulator, the second spatial light modulator being an~~and further comprising a second spatial light modulator having a plurality of optically addressable pixels forming an~~ optically addressable spatial light modulator ~~(11) arranged to receive light from the first spatial light modulator (3) and modulate such received light onto the scatter plate (5)~~.

8. (Currently amended) The system of claim 7 wherein the optically addressable spatial light modulator ~~(11)~~ is a plurality ~~(14)~~ of individual optically addressable spatial light modulators ~~(11)~~ connected together in a tiled manner.

9. (Currently amended) The system of claim 8 and including a scanner ~~(15)~~ for scanning light from the electrically addressable spatial light modulator ~~(3)~~ onto each individual modulator ~~(11)~~ in a sequence.

10. (Currently amended) The system of claim 8 wherein the plurality of individual modulators ~~(11)~~ is operable either in transmission or reflective mode.

11. (Currently amended) The system of claim 1 wherein the incident light source ~~is provided by~~ comprises one or more light sources ~~(1)~~ at one or more different wavelengths or broadband (white) light.

12. (Currently amended) The system of claim 1 wherein the incident light source is a single light source adapted to provided light to all pixels in at least one of the ~~first~~ spatial light modulators ~~by a single light source (1)~~.

13. (Currently amended) The system of claim 1 wherein the incident light source is a laser adapted to provided light to all pixels in at least one of the ~~first~~ spatial light modulators. ~~by a laser light source (1).~~

14. (Currently amended) The system of claim 1 wherein the incident light source ~~is provided by~~ comprises one or more optical fibres.

15. (Currently amended) The system of claim 1 and further including a detector ~~(8)~~.

16. (Original) The system of claim 15 wherein the detector is an array of detector elements.

17. (Original) The system of claim 15 wherein the detector is a bundle of optical fibres.

18. (Original) The system of claim 15 wherein the detector is a screen for receiving an image and viewing by an observer.

19. (Currently amended) A method of providing a holographic image ~~(7)~~ to an observer ~~(8)~~ including the steps of:

providing a holographic engine ~~(4)~~ for storing a computer generated hologram pattern of an image to be displayed;

providing a spatial light modulator ~~(3)~~ having a large number of addressable pixels each capable blocking or passing light under the control of the engine ~~(4)~~;

controlling the spatial light modulator ~~(3)~~ so that the observer ~~(8)~~ receives a holographic image;

~~CHARACTERISED BY~~

providing a light scattering plate ~~(5)~~ of known characteristics to modify light from the spatial light modulator ~~(3)~~ and;

calculating and providing a compensated computer generated hologram pattern of an image to compensate for the known characteristics of the scattering plate ~~(3)~~ so that an observer ~~(8)~~ receives a holographic image ~~(7)~~.

20. (Original) The method of claim 16 wherein the compensated pattern is calculated using a direct binary search algorithm.

21. (Currently amended) A method of increasing the range of diffraction angles from a computer designed diffraction structure including the steps of:

providing a holographic engine ~~(4)~~ for storing a computer generated pattern of a structure to be displayed;

providing a spatial light modulator ~~(3)~~ having a large number of addressable pixels each capable of modulating light under the control of the engine ~~(4)~~;

~~CHARACTERISED BY~~

providing a light scattering plate ~~(3)~~ of known characteristics to modify light from the spatial light modulator ~~(3)~~ and;

calculating and providing a compensated computer generated pattern of a diffractive structure to compensate for the known characteristics of the scattering plate so that an increased range of diffraction angles are obtained.